GEO

Guyana Economic Opportunities

MIS Assessment for the Trade Policy Unit of the Ministry of Trade

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I. Introduction

As part of the objective to strengthen the overall functional capacity of the Ministry of Trade's Trade Policy Unit (TPU), the Guyana Economic Opportunities (GEO) Project wishes to determine the training and technical assistance needs of the Unit. In this vein, a consultancy was established to determine the following:

- The feasibility of implementing information systems within the TPU.
- Information technology requirements of the TPU.
- The development of procedures for data collection.
- Overall reporting requirements.
- The functional specifications for the design, development and implementation of a customized Management Information System.

This document presents the overall concept and approach for the development and implementation of a Trade Information Management System (TIMS). The proposed solutions in this document, which are based on a series of discussions with relevant staff and the evaluation of current data inputs/outputs, are addressed from a management and computerized procedures perspective. It is a comprehensive document detailing the following:

- Overview of the existing environment.
- The overall concept of a proposed Trade Information Management System.
- The system architecture required to support the proposed management information.
- The business functions of the proposed information system.
- The constraints affecting the implementation and usage of the management information system.
- The benefits of a comprehensive Trade Information Management Information System.
- The feasibility of implementing this type of Management Information System.

The primary goal is to implement a management information system which will allow easy data inputs and facilitate the production of timely analysis reports. The proposed system will be written using industry standards, modern computer languages and database techniques, and a flexible design that will allow for expansion as the needs evolve and the skills base improves within the TPU.

II. Background

The Trade Policy Unit of the Ministry of Trade, as part of its information technology objective, has recognized the need for a Management Information System to effectively support the ability of the Unit to monitor the trade data generated by the Guyana Revenue Authority's Customs and Trade Administration division.

The objective of this exercise therefore is to evaluate the information technology and reporting requirements that will form the basis of an improved Management Information System.

The document outlines the following:

Environmental Analysis:	An examination of the current technical and operational environment within the Trade Policy Unit.
Information System Concept:	Design and functional specifications of the information system, the base data requirements, the technical environment required, the skills base and training needs required.
Benefits Analysis:	An analysis of the overall benefit of implementing an information technology solution for the Trade Policy Unit of the Ministry of Trade.
Feasibility:	A concise analysis of the feasibility of the proposed system.

This document is targeted at managers. Knowledge of computer systems, while helpful, is not a prerequisite.

III. Analysis of the Current Environment

A. Data Collection and Storage

There is no formal method of data collection and analysis currently in existence within the Trade Policy Unit. The Customs and Trade Administration division of the Guyana Revenue Authority provides import and export data on a monthly basis. The Trade Policy Unit, however, does not have the capacity to import, analyse and generate reports on the information provided. The Unit also requests and receives statistical information from the Bureau of Statistics when required. Interviews with personnel, however, indicated that there is some unhappiness with the time it takes for this information to be delivered.

The internet is also used as an information resource. The information accessed from this source is generally accessed on an *ad hoc* basis and primarily for policy objectives and initiatives being developed.

B. Existing Information Systems

Previous reports and interviews had indicated that statistical software has been provided to the unit to support data analysis and reporting. There was no evidence of any software in use during this exercise. The personnel interviewed indicated that statistical software was installed in one of the computers within the unit but that machine had crashed since December 1999.

C. Computer Literacy

The skills level within the Unit does not appear go beyond the use of word-processing software, spreadsheet applications, internet access/navigation and data entry when and where required. This is insufficient for the day-to-day operations of management information systems. Training, therefore, is a major component of any move to a more comprehensive management information solution.

D. Systems Support

There is no permanent, in-house technical support for hardware and potential management information systems. Two Canadian volunteers attached to the Ministry on another project provide some technical assistance when and where necessary. The Permanent Secretary has indicated that the Ministry is now working on the establishment of the Management Information Systems Unit (MISU). In the short term, basic training can be provided to members of the Trade Policy Unit so as to ensure that they fully operate and utilise the information systems implemented.

E. Technical Environment (Hardware)

Between the offices of the Permanent Secretary and the TPU there are six computers. The current operational status of these machines is as follows:

- There is one workstation with internet access.
- One workstation is being used as a WTO reference center.
- There is one office support workstation.
- There is a workstation in the office of the Permanent Secretary.
- The file server crashed over two months prior to the preparation of this report, and was reactivated only with the assistance of the GEO information technology consultant.
- The workstation for statistical operation had been inoperable since December 1999.

A major cause for concern is that the Ministry of Trade does not have any mechanisms in place to repair and/or replace defective equipment when soon as they become damaged. Even more disturbing is the fact that there seems to be some level of acceptance of this state of affairs. The server was down for two months because the power supply was damaged. The computer used for statistic processing and reporting crashed in December

1999. The server was restarted only with the assistance of the GEO information technology consultant during this evaluation exercise.

F. Staff Training

Like many other divisions within this Ministry, there are acute staff shortages in many areas. As indicated above, the computer skills that exist do not go beyond word-processing abilities and basic support for the existing project profile information system. The Permanent Secretary has indicated the need for extensive training and recruitment of staff.

IV. Proposed Solution

This section of the document provides a technical overview of the proposed information technology solution for the Trade Policy Unit. The functional specifications presented will provide a clear and concise illustration of the functions and services provided by the system. Also outlined in this section is the overall systems architecture under which the proposed system will operate and support the relevant organisational units.

A. Overview

In view of the findings as outlined in Sections I.C, I.E and 1.F, it is recommended that a short training course in the fundamentals of computer operation and in-house maintenance be introduced to the staff within the TPU. This course should not be intensive but should transfer the skills required until the Ministry of Trade establishes an MIS Unit. The staff within the TPU should therefore be introduced to the following:

- Basic network administration
- File server operations
- Basic hardware maintenance
- Data maintenance

Part of this training program should be the development of a procedures manual that will ensure the long-term sustainability of the operations/procedures developed during the training sessions.

The information management system proposed is a Trade Information Management System that will support the information technology and management requirements of the Trade Policy Unit. This database management information system will allow key staff to have easy and timely access to all import and export data and also company profiles on all business entities that produce goods/services for export. Some of the properties of this system are as follows:

- Standard Data Formats will be established for consistent data entry and retrieval of information.

- The information system will be designed to facilitate concurrent access over a Local Area Network (LAN).
- Standard reports will be designed to be generated upon request or as selected (*i.e.*, monthly, quarterly or end-of-year). An *Ad Hoc* Reporting utility with be implemented to facilitate individual requests.

The primary business functions of the system will be as follows:

- The electronic import of trade-related data generated by the Customs and Trade Administration division of the Guyana Revenue Authority (GRA).
- The recording and maintenance of company profiles with specific emphasis on the goods/services that they produce for export.
- The generation of statistic reports that will assist the TPU in its decision-making processes.

The overall benefits will be as follows:

- *Storage:* There does not currently appear to be any structured records management and file-storage procedures. Information therefore would be far easier to maintain in an electronic format.
- *Access:* Information will be easily retrieved using structured data searches and *ad hoc* queries.
- *Reporting:* Reports would be generated easily upon request or on a regulated basis from a fully integrated system.

The overall objective would be to implement an Information System that would allow the unit to enter project-related data on a monthly, quarterly or biannual basis. From this system, standard reports can be generated and *ad hoc* reports can be built upon request. There would be no instances of divisions and/or external agencies waiting for reports to be delivered. They will all be able to access required information individually and at will.

B. Architecture and Operating Environment

The Trade Information Management System (TIMS) will comprise of sub-systems, which will support the data requirements of the Unit. This section outlines the proposed architecture, operating environment and the overall requirements under which this application must effectively operate.

Systems Management

The data administration, maintenance and application support of the proposed system will be the responsibility of the Trade Policy Unit of the Ministry of Trade. The new MISU will assume the responsibility of physical database maintenance and administration when it is created.

Networked (Multi-user) Access

The proposed application will be installed on the Local Area Network (LAN) installed within the TPU so as to facilitate multi-user access.

Operating System Security

The system will require that its operating system (OS) have the capability of verifying all logins through a password-protection mechanism. These capabilities include the ability to protect directories and/or files, the ability to enforce password change schedules, and the use of administrative tools to ease network administration. OS-level security must be compatible with other levels of security to provide a manageable environment.

Database Enforced Security

The system requires that data security at the lowest level must be enforced through the recommended database engine.

Documentation

It is expected that the vendor(s) of the application and/or sub-system will provide full and comprehensive documentation for any operational procedures and functions implemented. Technical documentation shall be provided for any customisation and/or modifications after deployment.

User documentation shall be available in hard copy, as well as on-line form. The users should be provided with a feature that will permit examination of all application features on-line.

Data Volumes and Workloads

Data volumes and workloads cannot be ascertained until final data requirements are established and guidelines are also established for the collection and dissemination of required information.

Hardware Requirements

The basic hardware requirements for the implementation of the proposed system are adequately met by the existing computer hardware in the TPU. It is estimated, however, that there may be a need for additional hardware as data volumes increase over the operation and life cycle of the proposed system.

Summary

The user interfaces provided in the proposed system must provide easy access to all relevant information and reports with the least amount of keystrokes. Menus and data entry/edit screens must be flexible and intuitive, requiring only the minimum amount of training necessary for day-to-day operations. Documentation help must be provided as an informative reference during day-to-day operation. *Ad hoc* query utilities are provided so as to facilitate flexibility and accuracy in reporting. These reports can be generated either to the screen, printer or user-defined text files. Extensive reference files are maintained so as to provide users with easy-to-access agency-wide information.

C. Users

It is envisioned that the following agencies may use the proposed systems to either input or access information. It should be noted that the Trade Policy Unit would determine the level of access.

- Trade Policy Unit
- *MTTI to decide on access by other units and/or outside agencies*

D. Definition of System Functions

The following is an overview of the system functions required for the TPU System.

Security access controls:

- Systems settings and restrictions
- Establishment of user profiles
- Security-level settings based on users/group

Reference listings:

- Import/export commodity listings
- Importer/exporter listings
- Economic sector listings
- Company profile listings

Import/export data maintenance:

- Import trade data from the Customs and Trade Administration of the GRA.
- Update all trade databases

Reports:

- Monthly/quarterly/yearly import/export reporting by commodities or commodity classifications.

- Monthly/quarterly/yearly reporting for basic need items
- Comparative reporting by month or year for analysis
- Export information reporting by all or selected companies

System validations:

- Supervisory and management-level password required to modify trade data
- Supervisory and management-level passwords required to modify company profile information.

V. Implementation

This section outlines the proposed work plan for the implementation of the Trade Management Information System. The work plan will be based on a phased approach that will ensure the required level of comfort with the new system, its successful completion and sustainability over the long run.

A. Work Plan

Activity	Objective(s)	Duration
1.Basic training and development of a procedures manual	To ensure that the relevant staff have an appreciation of the information that needs to be maintained and also the minimum training required to manage this information on a day-to-day basis.	7 days
2. Data definition	To meet with all relevant staff to establish an understanding of and concurrence with the proposed data tables, elements, database scheme and data-entry screens.	3 days
3. Development of the trade data module	To build and test all databases and the import facility to data-entry screens to facilitate the input of project profiles.	10 days
4. Development of company profile module	To build and test the databases, data-entry screens, design the interfaces to the project module and facilitate input of project-related activities.	10 days
5. Installing and testing of all modules	Full product completion and full installation of information system.	2 days
6.Staff training	To ensure that all staff have a working and administrative knowledge of all aspects of the new system.	5 days
7.Provision of system documentation and user manuals	Staff must have an easy information technology reference available for day-to-day operations.	During development and implementation

Staff training will be spread over the installation of each module. This reduces to a large extent the overall learning curve required by the Project Management System.

B. Project Staffing

The proposed staff requirements for the implementation of TPU System are as follows:

- One (1) Programmer/Analyst (serves as Project Manager)
- One Documentation Specialist

VI. Feasibility

This section provides an analysis of the feasibility of implementing the Trade Information Management System.

A. Implementation Requirements

The successful implementation of the Trade Management Information System would depend on many factors. These include:

- The effective determination and implementation of adequate pace and levels of training, support and knowledge transfer levels with system users and MIS personnel.
- The provision of additional human resources, if required, to ensure an effective implementation of the new system .
- The establishment of rules and regulations pertaining to the production of standard inputs and outputs within the unit.

B. Implementation Risks

The following are the risks inherent in the installation of the TMIS:

- Inadequate user training for, and support during, system implementation.
- Low technology absorption rate by system users.
- Failure to provide the required hardware/software support required for implementation.
- High staff turnover/migration rates by system users.

VII. Conclusion

The success of the proposed implementation will depend primarily on the ability of the Trade Policy Unit to maintain the information received. Computer hardware must be repaired and maintained/serviced on a regular basis. A computer not working for a long period because of relatively minor problems is not acceptable. All information received from the Customs and Trade Administration Division (GRA) must be imported and processed in a timely manner. There must also be disciplined approach to management reporting and a clear understanding of the role of these reports.

What is encouraging is that the Ministry of Trade recognises clearly that these are issues that need to be resolved and supports fully all initiatives in this regard. This is good start and would certainly make easier the required implementation and sustainability of the Trade Information Management System over the long run.